

CLAIMS

I claim:

- 1 1. An adaptive face recognition system, comprising:
 - 2 a database configured to store a plurality of face classes;
 - 3 an image capturing system for capturing images;
 - 4 a detection system, wherein the detection system detects face images by
 - 5 comparing captured images with a generic face image;
 - 6 a search engine for determining if a detected face image belongs to one of a
 - 7 plurality of known face classes; and
 - 8 a system for generating a new face class for the detected face image if the search
 - 9 engine determines that the detected face image does not belong to one of the known face
 - 10 classes.

- 1 2. The adaptive face recognition system of claim 1, further comprising an adaptive
- 2 training system that adds the detected face to an associated face class when the search
- 3 engine determines that the detected image belongs to one of the known face classes.

- 1 3. The adaptive face recognition system of claim 2, wherein the adaptive training system
- 2 adds the detected face using a sequential eigen decomposition.

1 4. The adaptive face recognition system of claim 1, wherein the image capturing system
2 comprises:

3 a video camera; and
4 a face tracking system that causes the video camera to follow a face.

1 5. The adaptive face recognition system of claim 1, wherein the generic face image is
2 represented by a set of eigentemplates.

1 6. The adaptive face recognition system of claim 1, wherein the detection system utilizes
2 a distance criterion to determine if the detected face belongs to one of the known face
3 classes.

1 7. The adaptive face recognition system of claim 1, further comprising a control system
2 for controlling access to user applications.

1 8. The adaptive face recognition system of claim 7, wherein the control system controls
2 access based on an identification of one of the face classes by the search engine.

1 9. The adaptive face recognition system of claim 7, wherein the control system includes
2 an administrative interface for labeling face classes and providing access to reports
3 regarding usage of user applications.

1 10. A method for performing adaptive face recognition, comprising the steps of:
2 capturing a stream of image data;
3 identifying a face image from the stream of image data by comparing the image
4 data to a generic face image;
5 searching a database of face classes to determine if the detected face image
6 belongs to one of a plurality of known face classes;
7 if the detected face image belongs to one of the known face classes, adding the
8 detected face image to the face class that owns the face image; and
9 if the face image does not belong to one of the known face classes, creating a new
10 face class with the face image.

1 11. The method of claim 10, comprising the further steps of:
2 tracking the detected face image;
3 capturing additional views of the detected face image; and
4 adding additional views of the detected face image to the face class that owns the
5 detected face image.

1 12. The method of claim 10, wherein the step of searching the database of face classes
2 includes the step of using a distance criterion to determine if the detected face image
3 belongs one of the known face classes.

- 1 13. The method of claim 10, comprising the further step of controlling access to an
- 2 application based on the face class of the detected face image.

1 14. A program product stored on a recordable medium for performing adaptive face
2 recognition, that when executed, comprises:
3 a system for receiving image data;
4 a system for detecting a face image from the received images by comparing the
5 image data to a generic face image;
6 a system for searching a database of face classes to determine if a detected face
7 image belongs to one of a plurality of known face classes;
8 a system for adding the detected face image to an associated face class if the
9 detected face image belongs to one of the known face classes; and
10 a system for creating a new face class with the detected face image if the detected
11 face image does not belong to one of the known face classes.

1 15. The program product of claim 14, wherein the system for adding the detected face
2 image adds the detected face using a sequential eigen decomposition.

1 16. The program product of claim 14, further comprising a face tracking system that
2 causes a video camera to track the detected face.

1 17. The program product of claim 14, wherein the system for adding the detected face
2 image further comprising a selection system that selects only acceptable face images for
3 adding to the associated face class.

1 18. The program product of claim 14, wherein the detection system utilizes a distance
2 criterion to determine if the detected face belongs to one of the known face classes.

1 19. The program product of claim 14, further comprising a control system for controlling
2 access to user applications.

1 20. The program product of claim 19, wherein the control system controls access based
2 on an identification of one of the face classes by the search engine.